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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/755,008	01/05/2001	Jeffrey D. Birdsley	AMDA.469PA	4595
40581	7590	03/15/2005	EXAMINER	
CRAWFORD MAUNU PLLC 1270 NORTHLAND DRIVE, SUITE 390 ST. PAUL, MN 55120			WILLE, DOUGLAS A	
			ART UNIT	PAPER NUMBER
			2814	
DATE MAILED: 03/15/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/755,008

Applicant(s)

BIRDSLEY ET AL.

Examiner

Douglas A. Wille

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 January 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 12 – 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Claims 12 and 13 refer to modulation being adapted to inhibit optical beam intrusion upon the integrated circuit. This is not understood. Does this mean that modulation prevents the optical beam from reaching the circuit or does this mean that the optical beam is of sufficiently short duration that the optical signal is not detected by the circuit. If the former, the device would not be functional. If the latter, it is noted that carriers created by optical means will still be available for electrical interaction with the circuit. The specification provides no clarification on this point. Correction or explanation is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 12 – 16, 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paniccia et al. in view of Kikuchi.

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6. With respect to claim 12, Paniccia et al. show (see Figure 4 and column 4 et seq.) a means for directing a mode locked laser beam on to a substrate 405 using a lens 411 and a means for obtaining a reflected optical signal from the substrate but do not specify that the substrate is SOI. Kikuchi shows a means for evaluating an SOI substrate using optical techniques (see cover Figure and column 2, line 51 et seq.). Since Kikuchi shows that optical techniques can be used to evaluate an SOI substrate, it would be obvious to use the Paniccia et al. technique for SOI substrates since both the SOI and the usual substrates contain circuits.

7. With respect to claim 13, Paniccia et al. show (see Figure 4 and column 4 et seq.) an optical beam arrangement 407, 409, 411 for directing a mode locked laser beam on to a substrate 405 and a detection arrangement 411, 409, 417 to detect a reflected optical signal from the substrate but do not specify that the substrate is SOI. Kikuchi shows a means for evaluating an SOI substrate using optical techniques (see cover Figure and column 2, line 51 et seq.). Since Kikuchi shows that optical techniques can be used to evaluate and SOI substrate, it would be obvious to use the Paniccia et al. technique for SOI substrates since both the SOI and the usual substrates contain circuits.

8. With respect to claim 14, the laser 407 is a mode locked laser operating at 1.06 microns (column 5, line 42).

9. With respect to claim 15, mode locked lasers generally produce pulses in the picosecond range and it would be obvious to use any pulse length needed for circuit analysis. There is no evidence that the pulse length is critical and where general conditions of a claim are disclosed in the prior art it is not inventive to discover the optimum or workable ranges by routine experimentation. In re Aller, 220 F.2d 454, 456, 105YSPQ 233, 235 (CCPA 1955).

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10. With respect to claim 16, Paniccia et al. show the use of a bias applied to the device (column 6, line 38) which inherently includes a testing device to operate the circuit element.
11. With respect to claim 18, Paniccia et al. show the use of a visual output (see Figure 5).
12. With respect to claim 19, Paniccia et al. show a printer output (see Figure 5).
13. Claims 17 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paniccia et al. in view of Kikuchi and further in view of Dickol et al.
14. With respect to claim 17, Paniccia et al. and Kikuchi show device testing but do not specify how the testing is controlled. Dickol et al. show that testing can be performed under computer control (see Figure 3 and column 7, line 14). It would be obvious to use the computer control shown by Dickol et al. in the Paniccia et al., Kikuchi testing to provide details not shown.
15. With respect to claim 20, Dickol et al. show that waveform analysis can be performed if required and it would be obvious to use this analysis to supplement the testing.

Response to Arguments

1. Applicant's arguments filed 1/10/05 have been fully considered but they are not persuasive.
2. Applicant states that Examiner's arguments are illogical and states that applicant has repeatedly overcome Examiner's concerns.
3. First, Examiner's 112 rejection is considered. As was stated, it is not understood what inhibit means in this case. Choices were presented by Examiner in an attempt to help clarify the issue but Applicant has not responded to these suggestion, If these suggestions are not correct then Applicant should provide another explanation. Examiner suggested that the modulation might prevent coupling of the optical beam into the wafer under test. The other choice was that

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the modulation was of sufficiently short duration that the optical beam is not detected by the circuit. As was pointed out, if the first case is correct then the optical beam has no effect on the circuit and would be meaningless. If the second case is correct, the optical beam will generate carriers in the substrate and these carriers will move under the influence of electric fields. Note that as explained by Applicant (see the specification) the circuit is operated when the die is illuminated and thus electric fields will be present. Thus in the second case intrusion is not inhibited and the optical beam will effect the circuit and intrusion is not inhibited.

4. Then Applicant states, page 5, that the specification explains that the optical beam is pulsed will be prevented from reaching the circuit when the beam is in the "off" mode. Clearly the beam cannot effect the circuit when it is off but this has no bearing on the problem explained by Examiner. It is also noted that Applicant's attribution to the Specification cannot be located. Would Applicant explain where it occurs?

5. Applicant states that he does not understand how carriers generated by optical means relate in the context of a defective integrated circuit. First, note that since the circuit is being tested, it is not defective until it is determined to be so and might indeed be a completely effective circuit. If the circuit is functional the optically produced carriers will have an effect no matter how short the pulse is and intrusion is not inhibited.

6. Applicant states that it is not understood how inhibition of intrusion by a modelocked laser is taught. Note that Applicant's claims state that intrusion is inhibited by a short pulse laser beam. Assuming, *arguendo*, that the mechanism is sufficiently explained by Applicant and we therefore know what inhibition of intrusion means, then the use of a short pulse laser by Paniccia et al. will have the same effect as that produced by Applicant's short laser pulse and will equally

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inhibit intrusion. It is known in the laser art that mode locked lasers such as provided by Panaccia et al. have very short pulses and mode locking is a common technique for producing a stream of short pulses. Since Applicant is claiming the use of very short pulses from a laser it is assumed that Applicant is familiar with lasers. If this is not the case, references can be provided by Examiner upon request.

7. Applicant also states that Kikuchi does not show modulation, which is true but Kikuchi is not relied upon to teach modulation.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

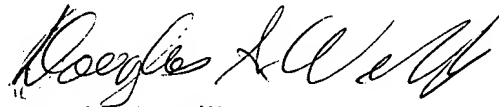
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas A. Wille whose telephone number is (571) 272-1721. The examiner can normally be reached on M-F (6:15-2:45).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

A handwritten signature in black ink, appearing to read "Douglas A. Wille".

Douglas A. Wille
Primary Examiner